Remarks

Claims 11, 45, 56, and 57 have been amended. No new matter has been added. Accordingly, claims 1-14, and 45-57 are pending in the application.

Claim Objections

Claims 11, 47-55 and 57 were objected to for the reasons noted in the office action. These objections have been overcome by the above amendments to claims 11, 47 and 57. No new matter to has been entered. Claim 45 is amended to correct a topographical error.

Claim Rejections - 35 USC § 112

Claim 47-57 were rejected under 35 USC § 112, second paragraph, for the reasons noted in the office action. These rejections have been overcome by the above amendments to claims 47 and 56. No new matter to has been entered.

Claim Rejections - 35 USC § 102(b)/103(a)

Claims 45, 47, 49-53 and 55 are rejected under 35 USC 102(b) as being anticipated by, or in the alternative under 35 USC 103(a) as being unpatentable over Akram et al (WO 99 31732). Claims 3 and 5-9 are rejected as being anticipated by, or in the alternative, being unpatentable over Akram et al. Claim 1 is rejected as being anticipated by, or in the alternative, being unpatentable over newly cited Wieczorek et al (US 6,352,885). Claims 4, 12-14, 46 and 48 are rejected as being unpatentable over Akram. Claim 2 is rejected as being unpatentable over Wieczorek et al in view of Akram. Claims 10 and 54 are rejected as being unpatentable over Akram in view of Admitted Prior Art (APA). Claims 11-14 and 56-57 are rejected as being unpatentable over Pan (US 5,750,435) in view of Motoyoshi et al (JP 6-53492). Applicant respectfully requests reconsideration of these rejection.

In the previous Office Action, the Examiner noted that the independent claims as broadly presented do not require that the overlap region have an ion implant concentration higher than all the remaining oxide layer portions extending outwardly from both the first and second leading edges of the gate structure. Accordingly, the independent claims were amended in the last response to recite such a limitation, which was neither disclosed nor suggested by the cited

references.

In the present Office Action, however, the Examiner now takes the position that Akram teaches a first portion or overlap region under the gate which has a concentration higher than in a second portion or overlap region and all remaining oxide layer portions extending outwardly from both the first and second leading edges of the gate structure. We believe, however, that the Examiner is incorrect in this position, as Akram shows that the ion concentration in the doped oxide layer portion extends beyond the gate structure, such that the ion concentration in the first portion or overlap region under the gate is not higher in concentration than in the second portion and all remaining portions of the gate oxide layer extending outwardly from both sides of the gate structure. See the attached mark up of FIGS. 9 and 10 of Akram for further explanation of the above noted deficiency of Akram.

Independent claim 1 recites, *inter alia*, "a first overlap region of the oxide layer located beneath said gate structure and adjacent said first leading edge and inward of said second leading edge and a second overlap region of the oxide layer located beneath said gate structure and adjacent said first overlap region and said second leading edge, said first overlap region having a predetermined ion implant concentration higher than in said second overlap region and all remaining oxide layer portions extending outwardly from both said first and second leading edges of said gate structure."

Independent claim 3 recites, *inter alai*, "a first overlap region which is beneath said gate electrode inward of said source region and adjacent said drain region and a second overlap region which is beneath said gate electrode and adjacent said first overlap region and said source region, said first overlap region having an ion implant concentration higher than in said second overlap region and all remaining portions of said oxide layer extending outwardly from both sides of the gate electrode."

Independent claim 12 recites, *inter alia*, "a first overlap region which is beneath said gate electrode inward of said source region and adjacent said drain region and a second overlap region which is beneath said gate electrode and adjacent said first overlap region and said source

regior , said first overlap region having an ion implant concentration higher than in said second overlap region and all remaining portions of said gate oxide layer extending outwardly from both sides of the gate electrode."

Independent claim 45 recites, *inter alia*, "a gate electrode located on a portion of said gate oxide layer, wherein the portion of said gate oxide layer beneath said gate electrode has first and second portions, and said first portion has a higher ion implant concentration than in said second portion and all remaining portions of said gate oxide layer extending outwardly from both sides of said gate electrode."

Independent claim 47 recites, *inter alia*, "a gate electrode located on said gate oxide layer, said gate oxide layer beneath said gate electrode having a first portion and a second portion, said first portion having a higher ion implant concentration than in said second portion and all remaining portions of said gate oxide layer between said pair of field isolation oxide regions."

Akram neither teaches nor suggest such limitations as recited by claims 1, 3, 12, 45, and 47. Furthermore, we note that the newly cited reference to Wieczorek is silent on such a limitation recited by the independent claims. Wieczorek teaches using either a blanketing or angled ion implant 136 (FIGS. 2C and 2D, respectively). Accordingly, the oxide portions extending beyond the gate structure have either a greater (vertical blanket implant as depicted by FIG. 2C) or the same ion concentration (angled implant as depicted by FIG. 2D) as the oxide portions just under the edge of the gate structure.

The remaining rejections are noted by the Applicants but are believed moot in view of the above amendments and remarks. Accordingly, Applicants assert that independent claims 1, 3, 12, 45, and 47, and the claims that depend therefrom, are patentable over the cited prior art and, therefore, respectfully requests that the anticipation and obviousness rejections to the claims be withdrawn.

Conclusion

The Applicants respectfully submit that, in view of the above amendments and remarks, the application is now in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,
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Akram (W099 3173ZA)

Attachment

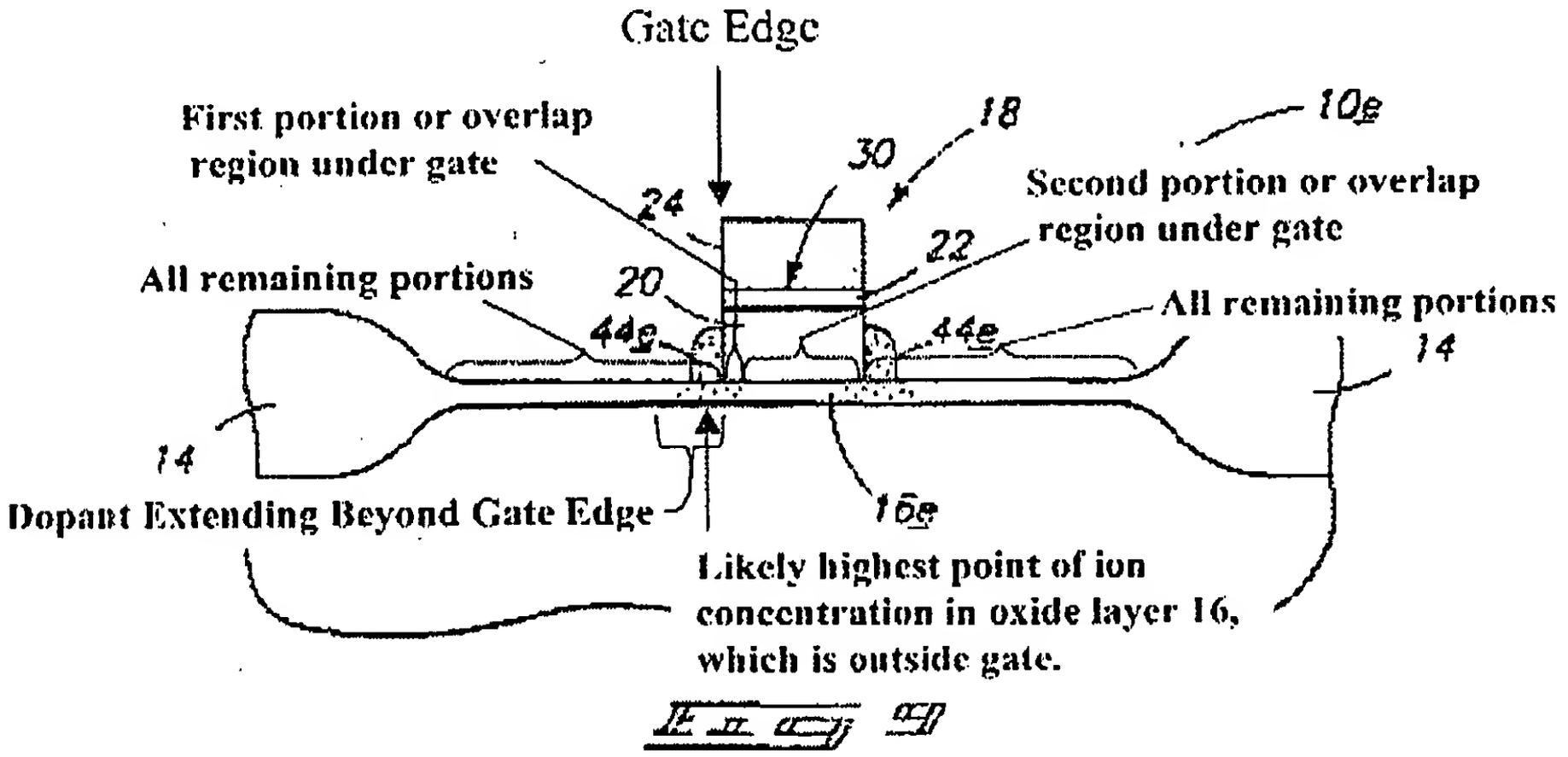

Fig. 9

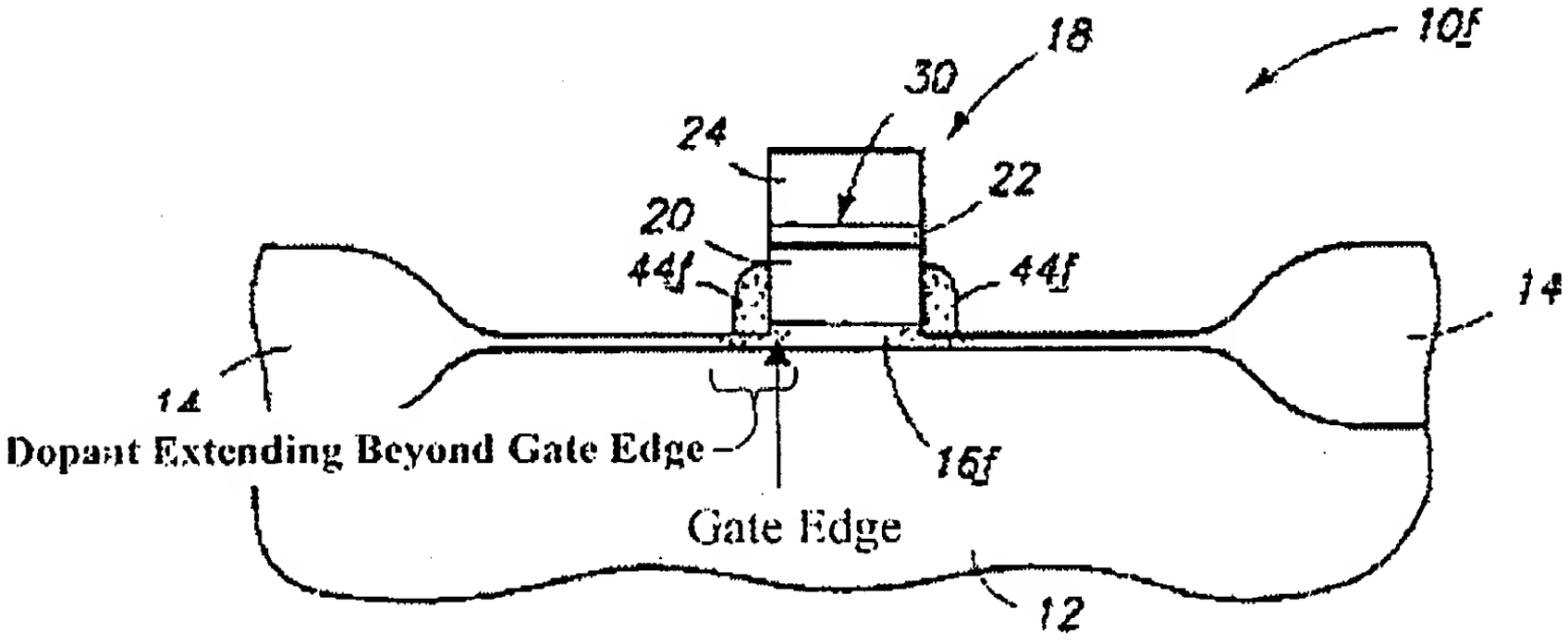

Fig. 10